

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report

Proposed Amended Rule 461 - Gasoline Transfer and Dispensing

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EXECUTIVE SUMMARY

Rule 461 – Gasoline Transfer and Dispensing controls the emissions of volatile organic compounds (VOC) and toxic air contaminants from gasoline transfer and dispensing operations by requiring the installation and use of California Air Resources Board (CARB) certified vapor recovery systems and mandating inspection, maintenance and periodic testing by owners/operators. Emissions from gasoline transfer and dispensing is one of the largest sources of VOC emissions from stationary sources in the South Coast Air Quality Management District (AQMD) and Rule 461 is one of the cornerstones of VOC emission control.

While AQMD requirements, such as Rule 461, have applied to just about all stationary sources, state law has exempted agricultural operations from most local air quality requirements. Senate Bill SB 700 (Florez) which took effect January 1, 2004, amended air pollution control requirements in California Health and Safety Code (H & S Code) to include requirements for agricultural sources. It is believed that agricultural sources are significant contributors to air pollution in some areas of the state.

Specifically, H & S Code Section 40724 requires local air pollution control districts and air quality management districts to adopt rules requiring best available control measures (BACM) and best available retrofit control technology (BARCT) for agricultural operations on or before July 1, 2005 and commence implementation of these rules on or before January 1, 2006. The requirements in Rule 461 are BARCT for gasoline dispensing. However, agricultural operations are specifically exempted in Rule 461. The main purpose for the proposed amendment to Rule 461 is to implement H & S Code Section 40724 by eliminating the exemptions currently applicable to agricultural operations subjecting such operations to the same requirements for gasoline storage and dispensing that apply to other stationary sources.

In order to enforce the requirements of Rule 461 and to set conditions on the operation of the basic and associated control equipment that ensures the emissions of air pollutants are reduced, the AQMD has required written permits for gasoline transfer and dispensing operations. Experience has shown that a strong enforcement presence is also necessary for gasoline dispensing operations to maintain a high level of compliance and the permit system has proven to be an effective means for optimizing enforcement efforts. Staff is recommending that all gasoline storage and dispensing equipment subject to the requirements of Proposed Amended Rule (PAR) 461 at agricultural operations be brought into the AQMD permit system, regardless of the size of the agricultural operation.

Currently, permits are required only at agricultural operations with actual emissions equal to or exceeding one half of the Title V emission thresholds. H & S Code Section 42301.16 allows written permits to be required for equipment at agricultural operations with emissions of less than one half the Title V emission thresholds provided the Board finds, at a public hearing, that a permit is necessary to impose or enforce reductions of emissions of air pollutants that cause or contribute to the exceedance of an ambient air quality standard and the requirement to obtain a permit is not significantly more burdensome for the agricultural source operators than the requirement for other operators at similar sources to obtain permits. Staff believes permits are necessary to effectively enforce and ensure compliance with the

requirements of PAR 461 at agricultural sources and the permit burden is no different than that of all other stationary source operators that are required to obtain written permits for gasoline storage and dispensing equipment. Therefore, staff is recommending that the Governing Board make the findings to require written permits for this equipment as part of the rule amendment public hearing. Upon making those findings, the staff will bring forward an amendment to Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II, that will require permits for equipment subject to the requirements of Rule 461 at all agricultural operations, regardless of the size of the operation.

In addition to the amendments to implement requirements of SB 700, staff is also recommending a number of administrative amendments that improve the enforceability and effectiveness of the rule. Finally, a limited exemption is proposed for the fueling of Tournament of Roses parade floats because of the minimal emissions and the technical infeasibility of accomplishing this in a safe manner.

The proposed amendments are not expected to result in a significant emissions benefit. Most agricultural operations have a low monthly throughput, particularly compared to retail stations, and it is expected that most will either forego on-site gasoline dispensing altogether or use tanks that are so small they are below the applicability threshold of the rule. While the administrative amendments will improve the enforceability and ensure a high level of compliance, it is not expected they will result in any additional SIP creditable emission reduction. Finally, the total volume of gasoline dispensed to Tournament of Roses parade floats is so small for such a short period of time that it will have an insignificant impact on air quality.

BACKGROUND

Rule 461 is designed to regulate gasoline vapor emissions into the atmosphere from gasoline transfer and dispensing processes. Gasoline vapors contain volatile organic compounds (VOCs) and toxic air contaminants (TACs) such as benzene, toluene and xylenes. VOCs react in the atmosphere photochemically to form ozone, which is a major ingredient of smog. Rule 461 was initially adopted in 1976 and has been amended a number of times.

Gasoline is a petroleum distillate, which contains a variety of volatile hydrocarbons and additives. Vapor recovery is a control strategy developed to collect the vapors generated during the transfer of gasoline at the dispensing facilities. Vapor recovery systems are required to reduce vapor emissions by at least 95 percent and California Air Resources Board certification is mandatory. Without such a control strategy, it is estimated that gasoline vapor emissions from this source category could be as high as 170 tons per day based on the amount of gasoline sold in the AQMD.

The gasoline transfer and dispensing VOC fugitive emission inventory is among the largest stationary and area sources inventories in the South Coast Basin. Therefore, control of these emissions is essential in improving the air quality in the Basin and a critical component of its attainment strategy. Vapor recovery systems at gasoline dispensing facilities (GDFs) are designed to recover vapors, and thus reduce emissions, during fuel delivery from the tank trucks (Phase I operations) and vehicle refueling (Phase II operations).

Until the passage of SB 700, gasoline storage and dispensing operations and other equipment used at agricultural operations was exempt from written permits. Additionally, many local air districts, including the AQMD, included exemptions for agricultural operations in their gasoline transfer and dispensing rules. It was recognized that without written permit requirements, enforcement of the gasoline storage and dispensing rule requirements to ensure that emission reductions would be achieved was impractical, at best.

However, with the passage of SB 700, BACM and BARCT became requirements to be implemented at agricultural operations. SB 700 mandates the schedule for implementation. The air districts are to adopt rules by July 1, 2005 requiring BACM and BARCT and implementation of these requirements are to commence by January 1, 2006. Rule 461 is BARCT for gasoline storage and dispensing.

In addition, SB 700 authorized air districts to require written permits for large agricultural operations and also for smaller operations provided certain findings are made at a public hearing.

AFFECTED INDUSTRY

Currently, agricultural facilities have a limited exemption from the requirements of Rule 461. Results of an AQMD survey lead staff to believe that there could be as many as 100 agricultural GDFs which utilize about 400,000 gallons of gasoline annually. Although some of these agricultural GDFs may be operated by a service provider, most are operated as an incidental part of the agricultural operation. By comparison, there are approximately 3,200 retail GDFs and 1,500 non-retail GDFs in the AQMD, dispensing about 6.3 billion gallons of gasoline annually. Over 95 percent of the throughput is from the retail GDFs.

Survey of Agricultural Facilities

Between April and June of 2004, the AQMD Engineering and Compliance Staff conducted an Agricultural Operations survey that was mailed out to a total of 1,925 agricultural operations in the Basin. The mailing was not directly undertaken by AQMD staff, but was done by a clearinghouse mailing service, which received mailing lists from Western United Dairymen, Pacific Egg and Poultry Association, Los Angeles Farm Bureau, the Regional Water Quality Board and other similar agencies. Of the 1,925 surveys mailed there were 885 responses, which indicated that 67 of these operations had gone out of business. Although this survey did not provide detailed information regarding gasoline transfer and dispensing, there were 93 non-Title V agricultural facilities that indicated they did gasoline transfer and dispensing on-site.

Staff visited 50 of these agricultural operations that included dairies, poultry operations and orchards and found eight operations had closed and another four indicated that closure was pending. A total of 25 aboveground and 3 underground gasoline tanks were observed at 25 facilities. Table 1 summarizes the Phase I and Phase II components present at the facilities that were surveyed.

Table 1
Summary of Agricultural Operations Survey Results

PHASE I		PHASE II	
COMPONENT	NUMBER	COMPONENT	NUMBER
Submerged Fill Tubes	7	Total Dispensers	33
Spillbox	4	Total Nozzles	33
Internal Drain Valve	3	Balance Systems	7
Pressure Relief Valve	5	Vacuum Assist Systems	0
Vapor Return Line	4	Other Types of Dispensers	6
Vapor Check Valve	2	Insertion Interlock Mechanism	2
		Vapor Check Valve	5
		Pressure Relief Valve	1
		Coaxial Hose	6

PROPOSED AMENDMENTS

The amendment is designed to satisfy the requirements of Senate Bill 700 (SB700) by requiring BARCT at agricultural operations. In addition, the proposed amendments will also improve the compliance and efficiency of the program to ensure emission reductions are maintained. The proposed amendments are summarized as follows:

- Remove the exemptions for agricultural operations
- Require installers and maintenance personnel of Phase I and Phase II Enhanced Vapor Recovery (EVR) equipment to successfully complete manufacturer training and state certification programs for systems that they are installing or maintaining
- Clarify that both GDF owners and underground storage tank installation contractors are responsible in ensuring that backfilling operations are performed properly
- Require GDF owners to reference all manufacturer required maintenance cycles in O&M manual
- Require self-inspection to be per CARB certification requirements, and owners/operators conducting periodic self inspections to be trained
- Require mandatory AQMD observation of all 30-day performance tests
- Require non-retail gasoline dispensing facilities to keep operations and maintenance (O&M) records
- Require gasoline dispensing facilities to record all equipment component installation in O&M manual
- Exempt fueling of parade floats from phase II requirements

By addressing these concerns the proposed amendments will seek to accomplish the following goals:

- Implement BARCT requirements of SB 700
- Improve in-service performance of equipment
- Improve recordkeeping
- Enhance accountability of installers, maintenance and testing contractors

- Improve rule enforceability

First and foremost, the proposed amendments will eliminate by January 1, 2006, the exemptions from the rule requirements currently enjoyed by agricultural operations by subjecting them to the same requirements that apply to all other non-retail gasoline transfer and dispensing operations. Requirements for non-retail operations have been in place in the AQMD for a number of years and rules similar to Rule 461 are required throughout California. The CARB-certified control systems are readily available and were observed to be in operation at a few of the agricultural operations recently visited by staff.

Those observed with the CARB-certified systems in place appeared to be at some of the larger throughput operations. The indicated throughput by these operators were 2000 gallons a month or more, which is equivalent to that of some of the smaller non-retail operators in other industries. Most of the other agricultural operations visited indicated a much lower throughput of 100 to 500 gallons per month. Most also indicated a downward trend in the use of gasoline and that most equipment was now diesel-fueled. Some of the lower throughput operators indicated that on-site gasoline dispensing was strictly a convenience and would phase it out if it became no longer convenient. However, others indicated that the nature of their operation was such that they would continue to dispense gasoline on-site.

Rule 461 applies to the storage and dispensing of gasoline from stationary tanks with a capacity of 251 gallons or more and mobile fueler tanks with a capacity of 120 gallons or more. Based on the typical throughput of 100 to 500 gallons per month, most agricultural operators interviewed said that use of the small tank would be acceptable for their operations. Furthermore, tanks of 250 gallons or less are plentiful and inexpensive.

It is also staff's recommendation that the handful of operators that elect to install CARB-certified systems and be subject to the requirements of Rule 461 also be permitted by the AQMD, regardless of the size of the agricultural operation. Experience implementing Rule 461 has shown that the CARB-certified vapor recovery systems require continuous attention by the operator to ensure they operate properly. A vigorous inspection and maintenance program that includes mandatory periodic testing that could be witnessed by AQMD staff are among the requirements of the vapor recovery program. History has also shown that without a strong AQMD enforcement presence retail and non-retail operators alike do not adequately maintain or operate the vapor recovery systems to achieve the required control efficiency on a continuous basis. It is expected that agricultural operators will perform no differently than the universe of other operators and the permit is the mechanism that will allow the AQMD to ensure compliance is achieved. Without a permit, compliance staff would have to guess which operators were subject to the rule making compliance totally unenforceable. The associated permit fees will also allow the AQMD to partially recover the increased engineering analysis and compliance costs directly from those receiving the source rather than other fee programs subsidizing these increased costs.

AQMD permits are authorized for sources below one half of the Title V emission thresholds by H & S Code Section 42301.16, provided the AQMD Board, at a public hearing, finds that a permit is necessary to impose or enforce reductions of emissions of air pollutants that cause or contribute to exceedances of a state or federal ambient air quality standard and the requirement for a source or category of sources to obtain a permit would not impose a burden

on those sources that is significantly more burdensome than other similar sources of air pollution. Staff will recommend the Board make those findings at the public hearing to consider these amendments to Rule 461. Rule 461 is necessary to reduce VOC emissions in order to achieve and maintain the state and federal ambient air quality standards for ozone. Without a written permit for those sources subject to the requirements of Rule 461 the standards necessary to ensure the emission reductions are unenforceable. The permit requirement and associated fees are the same as those imposed on all other retail and non-retail operators subject to the requirements of Rule 461. Therefore, the permit is no more burdensome to agricultural operators than it is to other operators subject to Rule 461.

In order to implement the permit requirement an amendment to Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation III will be required. Upon the Board approval of the required findings staff will prepare the appropriate amendment to Rule 219 and bring it to a public hearing for Board consideration prior to the implementation date of Rule 461 for agricultural operations.

H & S Code Section 40724 requires that on or before January 1, 2006, that implementation of BARCT rules for agricultural operations such as Rule 461 be commenced. Staff is recommending that the amendments requiring agricultural sources storing and dispensing gasoline from stationary storage tanks with a capacity of 251 gallons or more or mobile fuelers with a tank capacity of 120 gallons or more to comply with the requirements of Rule 461 become effective January 1, 2006. Likewise, those subject to the requirements of Rule 461 should also be operating under valid AQMD permits by January 1, 2006. The typical permit processing time for a GDF is six to eight weeks from date of submittal of a complete application. The six months between date of adoption and effective date of the rule for agricultural operations is sufficient for operators to select and implement their chosen compliance option, including obtaining a permit for those that elect to be subject to the requirements of Rule 461.

Based on the discussions during the recent site visits, staff believes that after amendment of Rule 461, agricultural source operators will select one of three options for gasoline transfer and dispensing. It is expected that a handful of operators will elect to install an above-ground CARB-certified system. This will be limited to the few that operate a significant number of gasoline vehicles and dedicated on-site equipment. These would tend to be those that have the higher throughput for agricultural operations. There will also be a few that elect to discontinue all together on-site gasoline storage and dispensing and use existing retail facilities. The rest are expected to dispense from tanks that are small enough to be below the applicability threshold of Rule 461.

PAR 461 would also require that persons responsible for installing and maintaining Enhanced Vapor Recovery (EVR) equipment participate and successfully complete manufacturer installation training programs applicable to the system(s) that they are installing or maintaining as specified by CARB's Executive Order. These personnel will also be required to successfully complete any relevant state certification program for the installation or maintenance of vapor recovery systems.

Currently, Rule 461 requires AQMD inspection before a newly installed underground storage tank or its associated piping is backfilled. The inspection is used to verify that the vapor

recovery piping and its components are installed in accordance with the requirements specified by the CARB Executive Orders. However, PAR 461 would require the owner/operator of the GDF and the installer/contractor of the underground storage tank equipment to share the responsibility of ensuring that backfilling is properly completed.

Although the current rule clearly specifies that all components in a vapor recovery system must be CARB-certified, the interpretation of this requirement has been inconsistent when a component is repaired, rebuilt or replaced. As a result, the qualities of many components in use are less than satisfactory in terms of their capability and reliability in minimizing emissions. Rule 461 already clearly defines the criteria for CARB-certified systems and components as well as the types of repairs or rebuilds that would continue to keep the component as CARB-certified. PAR 461 will further substantiate VOC emissions reductions by requiring the operator to record all equipment and component installations and also require that all maintenance cycles specified by the manufacturer be referenced in the O&M manual. This requirement will attempt to reduce and possibly eliminate the incorrect installation of partial systems, which staff have observed and at the same time provide staff with an opportunity to identify modifications that require permit changes.

PAR 461 will mandate that AQMD staff observe all 30-day performance tests of the initial operation of new or altered gasoline transfer and dispensing facilities. Staff believes that since the performance test is used to test the installation process at GDFs, it is critical that these tests are performed properly and in accordance with the applicable CARB Executive Order and AQMD permits. Staff's experience is that several unobserved performance tests (sometimes conducted very late at night) have led to poor installations that have resulted in problems that are hard to detect. In many cases these defective installations are detected many months or years later. It should be noted that the current rule requires operators to obtain a confirmation number prior to testing. Staff has also pointed out that some performance tests were not performed as scheduled, thereby leading to a waste of AQMD resources.

The proposed amendments require non-retail gasoline dispensing facilities (NRGDFs) to keep operations and maintenance (O&M) records. In the current version of Rule 461 retail gasoline dispensing facilities (RGDFs) are subject to O&M recordkeeping requirements. However, inspections that have been conducted by AQMD compliance staff over recent years have led them to believe that there is a need for proper maintenance at NRGDFs. Further, staff believes that maintenance for non-retail gasoline dispensing facilities is equally as important as it is for RGDFs and that requiring NRGDFs to maintain O&M records will be no less onerous than requiring RGDFs to do so. Also, CARB through its Executive Orders continues to mandate new and more reliable components and equipment in an effort to improve the efficiency of gasoline transfer and dispensing operations and to further reduce VOC emissions. Staff believes that this effort needs to be further supported by documentation of all new equipment and components in the operators O&M manual.

Over the years the Tournament of Roses has been involved in self-fueling activities, using as much as 1,100 to 1,300 gallons of gasoline annually to fuel approximately 50 floats housed in indoor float barns. Due to the potential danger from spillage, explosion and fires involved in manually pumping this fuel from portable dispensers and 55-gallon drums, there was a switch to suppliers that use fuel tankers with a 200-foot hose that is extended to the floats.

However, because suppliers are unable to provide a vapor return line in excess of 50 feet, one operator monitors fuel transfer at the tanker truck while another operates the nozzle that is used to dispense fuel to the float indoor in an attempt to better manage the process.

CONTROL TECHNOLOGY

All gasoline dispensing facilities in the AQMD subject to the requirements of Rule 461 are required to install and maintain the vapor recovery systems for both Phase I bulk transfer and Phase II vehicle refueling operations. While all systems are required to be certified by CARB as capable of recovering 95 percent of the vapor emissions, different manufacturers take different approaches in designing vapor recovery systems. These systems are generally divided into two distinct categories: the balance system and the vacuum assist system. Within each category there are several different configurations.

It should be noted that certification of vapor recovery equipment and establishing performance standards and specifications lie within the jurisdiction of CARB, which is in the process of revising them. Once revised, the existing facility owner/operators will have four years to comply after at least two systems are certified under the new requirements.

Vapor Recovery for Phase I Operations

Gasoline is usually delivered by cargo tank trucks from the bulk distribution terminals to the stationary storage tanks at gasoline dispensing facilities. During the fuel delivery, the rule requires the reduction of emissions by diverting the gasoline vapor being displaced from the storage tank back into the unloading cargo tank truck. The captured vapors are then transported back to the distribution terminal for processing.

Vapor Recovery for Phase II Operations

Phase II vapor recovery collects displaced vapors from vehicle refueling operations at gasoline dispensing facilities. Vapors displaced at the vehicle fill pipe are collected by the vapor recovery nozzle then pass through the vapor recovery system to the stationary storage tank. There are two types of Phase II vapor recovery system, balance and vacuum assist. Balance systems operate on the principle of vapor displacement during vehicle refueling. Vacuum assist systems use vacuum generating devices, such as a vacuum pump to create a vacuum in the vehicle tank which pulls the vapor from the vehicle tank into the storage tank as gasoline is displaced.

ABOVEGROUND VAULTED STORAGE TANKS

Aboveground vaulted storage tanks are required to meet the requirements of Rule 461 and can be found in various configurations, such as oval and square and depending on the need of the owner/operator. These aboveground tank designs may consist of a single cell capable of storing and dispensing one (1) particular type of fuel or it can be of the split type that is capable of storing and dispensing two (2) different types of fuel. The capacity of these tanks can range from 200 gallons to 30,000 gallons, but the few observed during inspection at agricultural facilities were of the split variety, storing a combination 500 gallons of gasoline and 500 gallons of diesel. However, the fuel capacity distribution between the cells can vary and is dependent on the needs of the owner/operator.

There are several manufacturers of aboveground vaulted storage tanks with each having a CARB Executive Order for the certification of their vapor recovery system. In addition to CARB certification and AQMD requirements, owners/operators also have to meet the requirements of the local fire officials with jurisdiction where the system is installed.

Emissions Inventory

Since the proposed amendments would have potential emission impacts only for the new requirement for agricultural operations and the addition of the exemption for parade floats, only these will be addressed for inventory and emission reduction.

Staff conducted on-site visits to about 50 percent of the 100 agricultural facilities responding to the Engineering and Compliance Survey that reported they store and dispense gasoline, and observed a total of 64 aboveground tanks and six underground tanks. A total of 28 tanks that were located at 25 agricultural operations were used for gasoline storage. It should also be noted that staff did observe two gasoline storage tanks with dispensing equipment that comply with all the requirements of Rule 461. Most operators interviewed during the on-site visits estimated monthly throughput of 100 to 500 gallons. Assuming those responding to the survey are representative of the percentage of all agricultural operations dispensing gasoline and the operations observed during the on-site visits are representative of the throughput for the industry, staff estimates an annual throughput of 400,000 gallons. Assuming a worst case scenario where none of the gasoline storage tanks are equipped with vapor recovery, the emissions are uncontrolled, and the emission factors shown in Table 2 below are applicable.

Table 2
Estimated Emissions for Agricultural Facilities

Annual Throughput Mgal*	Working Loss		Breathing Loss		Refueling		Spillage		Total Emissions tpy
	EF** lb/Mgal	Emissions tpy***	EF lb/Mgal	Emissions tpy	EF lb/Mgal	Emissions tpy	EF lb/Mgal	Emissions tpy	
400	9.5	1.9	1	0.2	10	2.0	0.7	0.14	4.24

* 1,000 gallons
 ** Emission Factor
 *** tons per year

The proposed rule also provides an exemption for fueling the Tournament of Roses parade floats. The magnitude and frequency of emissions resulting from this fueling is negligible.

Emission Reductions

Based on discussions with agricultural source operators and the on-site visits, it is expected that approximately ten operators will install above-ground vaulted tanks with CARB-certified Phase I and II vapor recovery and none will install underground tanks and vapor recovery. These ten operators will dispense approximately 240,000 gallons of gasoline per year. It is expected that all other agricultural source operators will either forego on-site gasoline storage and dispensing and use existing retail facilities or store and dispense from tanks that are 250 gallons or less that are not subject to the rule. The latter will result in no emission reduction and those operations shifted to CARB-certified systems will result in 95 percent control. The

emission increase for the parade float exemption is negligible and is expected to more than offset these reductions from the agricultural operations.

COST AND FEASIBILITY

Cost Estimate

There are three compliance options, that agricultural operators are expected to choose from, installing a CARB-certified above ground tank, use small tanks that are not subject to the requirements of the rule or forego on-site refueling all together and use existing retail facilities

The costs of the proposed rule amendments are associated mainly with the replacement of existing aboveground gasoline storage tanks with vaulted storage tanks that satisfy the CARB specifications. This will be a cost effective option for agricultural operations with relatively higher gasoline throughput. Alternatively, agricultural operations with less gasoline throughput will choose to either take advantage of the existing small tank (less than 250 gallons) exemption option or refill at existing retail GDFs.

Costs of Replacing Storage Tanks with Vaulted Tanks

The cost of replacing an existing tank with a CARB-certified above-ground vaulted tank is estimated as follows.

Vaulted Tank Cost	\$15,000
AQMD Permit Application Fee	1,400
Annual Maintenance	600
Annual Testing	500
AQMD Annual Permit Renewal Fee	62

By comparison, the cost for a 250 gallon tank is about \$300 and the annual maintenance is minimal. There are no permit or testing requirements for these tanks.

Regarding the administrative changes to the proposal, it is estimated these would result in no additional cost.

Cost Effectiveness

Using the Discounted Cash Flow Method assuming a one-year life and a 4 percent real interest rate, the present value factor is 8.11

In the proposal, staff assumes that:

- 10 facilities will install CARB certified systems and
- 90 facilities will purchase 250 gallon storage tanks.

Therefore, the volume of dispensed gasoline using a CARB certified system will be:

$$10 \text{ facilities} \times 2,000 \text{ gal/month} \times 12 \text{ months/year} = 240,000 \text{ gal/year}$$

The annual VOC emissions will be:

$$\text{VOC Emissions} = \frac{21.20 \text{ EF lbs/Mgallons} \times 240,000 \text{ gal/year}}{2000 \text{ lbs/ton}} = 2.54 \text{ tons/year}$$

Emission Factor (EF) = Working Loss + Breathing Loss + Refueling + Spillage.

The annual VOC emission reductions will be:

$$\text{VOC Emission Reductions} = 2.54 \text{ ton/year} \times 95\% = 2.41$$

Cost-Effectiveness (CE)

$$\text{CE} = \frac{10 \text{ facilities } [\$16,400 + (\$1,162 \times 8.11)] + 90 \text{ facilities } (\$300)}{2.41 \text{ tons/year} \times 10 \text{ years}} = \$11,836 \text{ tons of VOC reduced}$$

Therefore, the cost-effectiveness value for this proposed amended rule is \$11,836 per ton of VOC emissions reduced. This is cost-effective compared to other adopted VOC control measures implemented as rules.

Incremental Cost-Effectiveness Analysis

Under California Health and Safety Code Section 40920.6 an incremental cost effective analysis for the potential control options must be included. The incremental cost effectiveness is defined to be the difference in the present values of control costs divided by the difference in the emission reductions between each progressively more stringent option as compared to the less expensive option.

The most stringent option would be to require all 100 agricultural facilities currently storing and dispensing gasoline to replace existing equipment with CARB certified systems. The cost-effectiveness for the most stringent control option is approximately \$63,760 per ton of VOC reduced, and the incremental cost-effectiveness is approximately \$144,240 per ton of VOC reduced.

Most Stringent:

$$\text{Volume of gasoline dispensed} = 400,000 \text{ gallons/year}$$

$$\text{VOC Emissions} = 4.24 \text{ tons/year}$$

$$\text{VOC Emission Reductions} = 4.24 \text{ tons/year} \times 95\% = 4.03 \text{ tons/year}$$

$$\text{CE} = \frac{100[\$16,400 + (\$1,162 \times 8.11)]}{4.03 \text{ tons/year} \times 10 \text{ years}} = \$63,760 \text{ per ton VOC reduced}$$

Incremental Cost-Effectiveness (ICE):

$$\text{ICE} = \frac{100 - 10 \text{ facilities } [\$16,400 + (\$1,162 \times 8.11)] + 90 \text{ facilities } (\$300)}{(4.03 \text{ tons/year} - 2.41 \text{ tons/year}) \times 10 \text{ years}} = \$144,240 \text{ per ton VOC reduced}$$

The incremental cost-effectiveness far exceeds the costs of adopted VOC rules.

DRAFT FINDINGS

Before adopting, amending or repealing a rule, the AQMD shall make findings of necessity, authority, clarity, consistency, non-duplication and reference, as defined in Health and Safety Code Section 40727. The draft findings are as follows:

Necessity - The AQMD Governing Board finds and determines that Proposed Amended Rule 461-Gasoline Transfer and Dispensing, is necessary in order to implement the requirements of Health and Safety Code § 40724 and improve the enforceability and effectiveness of the rule.

Authority - The AQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from Health and Safety Code §§40000, 40001, and 40440.

Clarity - The AQMD Governing Board finds and determines that Proposed Amended Rule 461, is written and displayed so that the meaning can be easily understood by persons directly affected by it.

Consistency – The AQMD Governing Board finds and determines that Proposed Amended Rule 461 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or federal or state regulations.

Non-Duplication – The AQMD Governing Board has determined that Proposed Amended Rule 461 does not impose the same requirements as any existing state or federal regulation.

Reference - In adopting these proposed amendments, the AQMD Governing Board references the following statutes which AQMD hereby implements, interprets or makes specific: Health and Safety Code Sections 40001 and 40440.

Small Agricultural Sources – Health and Safety Code Section 42301.16 allows written permits to be required for equipment at agricultural operations with emissions of less than one half the Title V emission thresholds provided the Board finds, at a public hearing, that a permit is necessary to impose or enforce reductions of emissions of air pollutants that cause or contribute to the exceedance of an ambient air quality standard and the requirement to obtain a permit is not significantly more burdensome for the agricultural source operators than the requirement for other operators at similar sources to obtain permits. Staff believes permits are necessary to effectively enforce and ensure compliance with the requirements of PAR 461 at agricultural sources and the permit burden is no different than that of all other stationary source operators that are required to obtain written permits for gasoline storage and dispensing equipment. Therefore, staff is recommending that the Governing Board make the findings to require written permits for this equipment as part of the rule amendment public hearing.

CONCLUSION

The proposed amendments to Rule 461 reflect best available retrofit control technology for reducing VOC and benzene emissions from gasoline storage and dispensing at agricultural operations and further it improves the enforceability and compliance of the rule. The rule also provides relief from the Phase II vapor recovery requirements for the fueling of

Tournament of Roses parade floats since this is not technologically feasible to do so in a safe manner.

REFERENCES

1. "Retail Gasoline Dispensing Facility Inspection, Rule 461 compliance Audit in the South Coast AQMD," Second Quarter 1997, South Coast Air Quality Management District.
2. "Emission Inventory Procedural Manual Volume III Methods for Assessing Area Source Emissions," Section 4.10 – Gasoline Dispensing Facilities, October 1997, Air Resources Board.